Complete Summary

GUIDELINE TITLE

Infectious disease. Laboratory medicine practice guidelines: evidence-based practice for point-of-care testing.

BIBLIOGRAPHIC SOURCE(S)

Campbell S, Campos J, Hall GS, LeBar WD, Greene W, Roush D, Rudrik JT, Russell B, Sautter R. Infectious disease. In: Laboratory medicine practice guidelines: evidence-based practice for point-of-care testing. Washington (DC): National Academy of Clinical Biochemistry (NACB); 2006. p. 76-94. [195 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Infectious diseases including:

- Anthrax
- Pseudomembranous colitis
- Infectious mononucleosis
- Chlamydia infection
- Gonorrhea
- Group A and B streptococcal pharyngitis
- Peptic ulcer disease
- Influenza
- Respiratory syncytial virus (RSV) infection

- Human immunodeficiency virus (HIV) infection
- *Trichomona vaginalis* vaginitis
- *Candida* vulvovaginitis
- Bacterial vaginosis

GUIDELINE CATEGORY

Diagnosis
Screening

CLINICAL SPECIALTY

Family Practice
Geriatrics
Infectious Diseases
Internal Medicine
Obstetrics and Gynecology
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Clinical Laboratory Personnel
Health Care Providers
Hospitals
Nurses
Physician Assistants
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

- To examine the application of evidence-based medicine (EBM) to the form of diagnostic testing known as point-of-care testing (POCT)

  Note: For the purpose of this document, POCT is defined as "clinical laboratory testing conducted close to the site of patient care, typically by clinical personnel whose primary training is not in the clinical laboratory sciences or by patients (self-testing). POCT refers to any testing performed outside of the traditional, core or central laboratory."

- To systematically review and synthesize the available evidence on the effectiveness of POCT, with specific focus on outcomes in the areas of:
  1. Patient/health
  2. Operational/management
  3. Economic benefit
- To evaluate the available literature concerning several infectious disease tests and determine whether or not the current literature supports the use of point-of-care, near patient, testing

TARGET POPULATION

Patients with infectious diseases or potentially exposed to infectious diseases, including children, pregnant women, elderly, and immunocompromised adults

INTERVENTIONS AND PRACTICES CONSIDERED

Point of care testing (POCT) for:

1. Infectious mononucleosis (IM) (heterophile antibody testing) in patients older than 12 years (Epstein-Barr virus specific serologies should be performed before ruling out IM).
2. Chlamydia (while the patient is present for treatment and follow-up)
3. Gram stain (for gonorrhea identification in symptomatic men)
4. Rapid test for diagnosis of Group A streptococcal pharyngitis
5. Influenza testing (when the virus is prevalent in the community)
6. Rapid test for respiratory syncytial virus
7. Rapid human immunodeficiency virus (HIV) testing
8. *Trichomonas vaginalis*
9. Bacterial vaginosis (in pregnant women)

Note: The following POC tests were considered and (1) recommended against: rapid test for *Clostridium difficile* and heterophile antibodies in children younger than 13 years; (2) no recommendation was made due to insufficient evidence: testing for anthrax, group B streptococcal pharyngitis, *Helicobacter pylori, Candida*.

MAJOR OUTCOMES CONSIDERED

- Sensitivity, specificity, and positive and negative predictive value of tests
- Patient outcomes such as antibiotic use, nosocomial infections
- Economic benefit

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

For a specific clinical use, pertinent clinical questions were formulated and key search terms were ascertained for the literature search. Searches were conducted on MEDLINE or PubMed and were supplemented with the use of the National Guideline Clearinghouse, the Cochrane Group, or evidence-based medicine (EBM) reviews. Additionally, authors' personal article collections were used. Acceptable citations were limited to peer-reviewed articles with abstracts, those published in English, and those involving human subjects.

To be included in the full systematic review of the clinical question, articles selected for full text review were examined for at least 1 relevant outcomes measurement.

See literature searches 47-60 in Appendix B (see the "Availability of Companion Documents" field) for details.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

I. Evidence includes consistent results from well-designed, well-conducted studies in representative populations.
II. Evidence is sufficient to determine effects, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies; generalizability to routine practice; or indirect nature of the evidence.
III. Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Abstracts identified by the literature searches were reviewed by 2 individuals to determine initial eligibility or ineligibility for full-text review, using Form 1 (Appendix A - see the "Availability of Companion Documents" field). If there was not consensus, then a third individual reviewed the abstract(s). To be included in the full systematic review of the clinical question, articles selected for full text review were examined for at least 1 relevant outcomes measurement. The systematic review consisted of creating evidence tables using Form 2 (Appendix A - see the "Availability of Companion Documents" field) that incorporated the following characteristics:

1. Study design—Prospective or retrospective, randomized, and controlled, patient inclusion/exclusion criteria, blinding, number of subjects, etc.
2. Appropriateness of controls
3. Potential for bias (consecutive or nonconsecutive enrollment)
4. Depth of method description—full-length report or technical brief

5. Clinical application—screening, diagnosis, management
6. Specific key outcomes and how they were measured
7. Conclusions are logically supported

For the assessment of study quality, the general approach to grading evidence developed by the US Preventive Services Task Force was applied (see the "Rating Scheme for the Strength of the Evidence" field). Once that was done, an assessment of study quality was performed, looking at the individual and aggregate data at 3 different levels using Forms 3 and 4 (Appendix A - see the "Availability of Companion Documents" field). At the first level, the individual study design was evaluated, as well as internal and external validity. Internal validity is the degree to which the study provides valid evidence for the populations and setting in which it was conducted. External validity is the extent to which the evidence is relevant and can be generalized to populations and conditions of other patient populations and point-of-care testing (POCT) settings.

The synthesis of the volume of literature constitutes the second level, Form 5 (Appendix A - see the "Availability of Companion Documents" field). Aggregate internal and external validity was evaluated, as well as the coherence/consistency of the body of data. How well does the evidence fit together in an understandable model of how POCT leads to improved clinical outcome? Ultimately, the weight of the evidence about the linkage of POCT to outcomes is determined by assessing the degree to which the various bodies of evidence (linkages) "fit" together. To what degree is the testing in the same population and condition in the various linkages? Is the evidence that connects POCT to outcome direct or indirect? Evidence is direct when a single linkage exists but is indirect when multiple linkages are required to reach the same conclusion.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The field of point-of-care testing (POCT), diagnostic testing conducted close to the site of patient care, was divided into disease- and test-specific focus areas. Groups of expert physicians, laboratorians, and diagnostic manufacturers in each focus area were assembled to conduct systematic reviews of the scientific literature and prepare guidelines based on the strength of scientific evidence linking the use of POCT to patient outcome.

Final guidelines were made according to Agency for Healthcare Research and Quality (AHRQ) classification (see the Rating Scheme for the Strength of the Recommendations field). The guidelines are evidence based and require scientific evidence that the recipients of POCT experience better health outcomes than those who did not and that the benefits are large enough to outweigh the risks. Consensus documents are not research evidence and represent guidelines for clinical practice, and inclusion of consensus documents was based on the linkages to outcomes, the reputation of the peer organization, and the consensus process used to develop the document. Health outcomes, e.g., benefit/harm, are the most significant outcomes in weighing the evidence and drafting guidelines.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Strength of Recommendations

A - The National Academy of Clinical Biochemistry (NACB) strongly recommends adoption; there is good evidence that it improves important health outcomes and concludes that benefits substantially outweigh harms.

B - The NACB recommends adoption; there is at least fair evidence that it improves important health outcomes and concludes that benefits outweigh harms.

C - The NACB recommends against adoption; there is evidence that it is ineffective or that harms outweigh benefits.

I - The NACB concludes that the evidence is insufficient to make recommendations; evidence that it is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

COST ANALYSIS

The guideline developers reviewed published cost analyses (see original guideline document for details).

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guidelines were presented in open forum at the American Association for Clinical Chemistry (AACC) Annual Meeting (Los Angeles, CA, USA) in July 2004. Portions of these guidelines were also presented at several meetings between 2003 and 2005. Participants at each meeting had the ability to discuss the merits of the guidelines and submit comments to the National Academy of Clinical Biochemistry (NACB) Web site for formal response by the NACB during the open comment period from January 2004 through October 2005.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions of the levels of evidence (I—III) and grades of the recommendation (A, B, C, I) are presented at the end of the "Major Recommendations" field.

Note from the National Academy of Clinical Biochemistry (NACB) and the National Guideline Clearinghouse (NGC)*: The Laboratory Medicine Practice Guidelines (LMPG) evidence-based practice for point-of-care testing sponsored by the NACB* have been divided into individual summaries covering disease- and test-specific areas. In addition to the current summary, the following are available:

- Chapter 1: Management
- Chapter 2: Transcutaneous Bilirubin Testing
- Chapter 3: Use of Cardiac Biomarkers for Acute Coronary Syndromes
- Chapter 4: Coagulation
- Chapter 5: Critical care
- Chapter 6: Diagnosis and Management of Diabetes Mellitus
- Chapter 7: Drugs and Ethanol
- Chapter 9: Occult Blood
- Chapter 10: Intraoperative Parathyroid Hormone
- Chapter 11: pH Testing
- Chapter 12: Renal Function Testing
- Chapter 13: Reproductive Testing

Bioterrorism

Are there tests for the detection of *Bacillus anthracis* spores as agents of bioterrorism that are or will be available for use as point-of-care testing (POCT)? Are these needed for "field" or POCT testing?

Guideline 109. No recommendation can be made for or against routinely providing POCT because there are no data to support the fact that routine nasal swabs in each office or laboratory would provide information that would aid in determining cause or presence of a bioterrorism agent, in particular anthrax. There is no good literature with randomized studies that would allow for one to determine if the need for testing these nasal swabs at POCT would aid in the investigation.
Strength/consensus of recommendation: I

Clostridium Difficile

Is there research available evaluating the clinical outcomes of rapid tests for *C. difficile* toxin performed at the point of care (POC)?

Guideline 110. There is fair evidence against POCT for *C. difficile* toxin at this time.
Strength/consensus of recommendation: C
Level of evidence: II

Infectious Mononucleosis (IM)

Have patient outcome studies been performed on the rapid tests that are available to screen for IM at the POCT site, and have the studies been performed by the POCT personnel?

Guideline 111. Recommend POCT for heterophile antibodies (HA) testing in patients >12 years old, fair evidence to support procedure. However, some individuals do not produce HA in IM, and if a negative test is obtained, Epstein-Barr virus (EBV)-specific serologies should be performed before ruling out IM.
Strength/consensus of recommendation: B
Level of evidence: II

Guideline 112. Recommend against POCT for HA testing in children <13 years old, fair evidence against procedure. It is well documented in the literature that a large portion of children do not produce HA. In these patients, EBV-specific serologies should be performed before ruling out IM.
Strength/consensus of recommendation: C
Level of evidence: II

Chlamydia Trachomatis* and *Neisseria Gonorrhoeae

Will direct examinations for *C. trachomatis* and *N. gonorrhoeae*, delivered as POC tests, achieve high enough sensitivity for routine care?

Guideline 113. POC *Chlamydia* tests should only be used while the patient is present for treatment and follow-up. If the results are not available until after the patient leaves, do not use POC tests. The gram stain may be used as a POC test for symptomatic men with urethral discharge.
Strength/consensus of recommendation: A
Level of evidence: II (small analytic studies and opinions of respected authorities)

Group A Streptococcal Antigen Tests

Are rapid tests for Group A streptococcal antigen performed at the POC useful for diagnosis of Group A streptococcal (GAS) infections? Is there research available evaluating the clinical outcomes of rapid tests for Group A streptococcal antigen performed at the POC?

Guideline 114. Rapid tests for diagnosis of GAS pharyngitis in general provide clinically useful, financially justified results; these tests also have utility for testing nonpharyngeal specimens. The recommendation of the American Academy of Pediatrics to confirm negative rapid GAS antigen detection results of pharyngeal specimens from children should be followed; the Infectious Diseases Society of America recommendation to perform laboratory tests (either throat culture or rapid antigen detection) on specimens from adults with clinical evidence of pharyngitis should be followed.
Strength/consensus of recommendation: A
Level of evidence: III

Group B Streptococci

Is there research available evaluating the clinical outcomes of rapid tests for group B streptococcus? Are rapid test kits reliable, and should they or should they not be used for POCT?

Guideline 115. There is insufficient evidence to recommend POCT for group B streptococcus. There was no literature found demonstrating a link to POC testing for Group B streptococcus and outcomes data.
Strength/consensus of recommendation: I

Helicobacter Pylori

Is there research available evaluating the clinical outcomes of rapid tests for *H. pylori* at the POC?

Guideline 116. There appear to be tests available for sensitive and specific testing at POC for *H. pylori*, but as yet no studies have been done to determine whether such POCT would have favorable clinical outcomes. Because tests including stool antigen tests, and urea breath tests have proven comparable in overall detection of *H. pylori* at the POC, studies should be conducted to determine their utility in early detection and treatment of dyspepsia-associated *H. pylori* disease.
Strength/consensus of recommendation: I

Influenza Virus Infection

Are there studies available for evaluating the clinical outcomes of rapid tests for influenza virus performed at the POC?

Guideline 117. The guideline developers found that the literature supports the lack of sensitivity and accuracy of clinical criteria alone for the diagnosis of influenza virus infection. Therefore, additional testing, including POCT, may be useful. These tests should only be used for POCT when the virus is prevalent in the community, and negative results should not be used to rule out influenza virus infections. Only nasopharyngeal swabs, aspirates, or washings should be used with these assays. The sensitivities of the tests using throat swabs are 60% or less. During the peak of an outbreak, not every single patient with flu symptoms needs to be tested, unless a positive result will result in the withholding of antibiotics. The greatest cost benefit is achieved when unnecessary antibiotics are not prescribed for patients with positive influenza virus test results. If treating with antivirals is being considered, the patient must be treated within the first 48 hours of onset of symptoms for even a minimal effect to be achieved.
Strength/consensus of recommendation: B
Level of evidence: I and III

Respiratory Syncytial Virus (RSV)

Are there studies available for evaluating the clinical outcomes of rapid tests for RSV performed at the POC?

Guideline 118. The literature supports the lack of sensitivity and accuracy of clinical criteria alone for the diagnosis of RSV infection; therefore, additional testing, including POCT, may be useful when used appropriately. Tests for RSV suitable for POCT have a broad range of sensitivity and specificity, and their positive and negative predictive values vary greatly, depending on the prevalence of the virus in the community. Because of these performance characteristics, these tests should only be used for POCT when the virus is prevalent in the community, and negative results should not be used to rule out RSV infections. Only nasopharyngeal swabs, aspirates, or washings should be used with these assays. The sensitivities of the tests using throat swabs are 60% or less. The greatest cost benefit is achieved when unnecessary antibiotics are not prescribed for patients with positive RSV test results.
Strength/consensus of recommendation: B
Level of evidence: I and III

Human Immunodeficiency Virus (HIV) Testing

Do rapid HIV antibody tests perform as well as laboratory-based methods (a) in validation studies and (b) in field studies? Are there sources of analytic variation unique to rapid/POC HIV test kits?

Guideline 119. Under validation conditions, currently available HIV antibody tests perform with comparable sensitivity and specificity to laboratory-based enzyme-linked immunosorbent assay (ELISA) methods in patient populations that are suitable for rapid testing.
Strength/consensus of recommendation: B
Level of evidence: I (at least 1 randomized controlled trial)

Guideline 120. In field studies, currently available HIV antibody tests perform with comparable sensitivity and specificity to laboratory-based ELISA methods.
Strength/consensus of recommendation: B
Level of evidence: I (at least 1 randomized controlled trial)

Guideline 121. Rapid/POC tests for HIV should be used by personnel well trained in the method, with ongoing quality control and performance-improvement programs.
Strength/consensus of recommendation: A
Level of evidence: II and III (small studies and opinions of respected authorities)

Guideline 122. Rapid/POC tests should be used with caution, if at all, to follow exposed persons who are heavily antiretroviral therapy (ART) treated.
Strength/consensus of recommendation: B
Level of evidence: II (dramatic results in uncontrolled experiments)

Does HIV testing at POC improve rates and timing of antiretroviral therapy (ART) for HIV-infected women in labor?

Guideline 123. Rapid HIV testing in the peripartum period, laboratory-based or POC, improves antiretroviral prophylaxis and most likely reduces peripartum transmission of HIV, provided systems are in place to use the information therapeutically.
Strength/consensus of recommendation: A
Level of evidence: II

Does HIV testing at POC provide benefits for blood- and body-fluid-exposed employees?

Guideline 124. Strongly recommend rapid testing of the source-patient for employee exposures.
Strength/consensus of recommendation: A
Level of evidence: II

Guideline 125. No recommendation regarding testing at POC.
Strength/consensus of recommendation: I

Does HIV testing at POC improve HIV case finding, entry into comprehensive HIV care programs, or facilitate changes in risky behaviors?

Guideline 126. No strong recommendation for rapid/POC testing in outreach settings can be supported by current literature, but there is reason to expect that certain populations could be better served by POC screening.
Strength/consensus of recommendation: I
Level of evidence: II

What algorithms for confirmatory testing should be used with POC HIV tests?

Guideline 127. Confirmatory testing should go directly to Western blot/immunofluorescence assay (IFA), bypassing a second enzyme immunoassay (EIA) step.
Strength/consensus of recommendation: A
Level of evidence: III

Guideline 128. In some resource-limited settings, a second, different rapid test is used for confirmation; this has not been carefully studied but is promising.
Strength/consensus of recommendation: I
Level of evidence: III

Trichomonas Vaginalis Vaginitis

Is there a clinical need for POC testing for the presence of *T. vaginalis* in the diagnosis of vaginitis? Will direct examinations for agents of vaginitis, delivered in POC format, achieve high enough sensitivity for routine care?

Guideline 129. The guideline developers would recommend POCT, given the fair evidence to support the procedure. Wet-mount examination of vaginal discharge for the presence of *T. vaginalis* is an insensitive procedure and should be replaced with newer methods that provide a higher level of sensitivity. Newer methods have been developed for POC that may result in better outcomes. Additionally, outcome data will need to be based on more sensitive tests that are used in pregnancy to establish an association with preterm labor/delivery and low-birth-weight deliveries.
Strength/consensus of recommendation: B
Level of evidence: III

Candida Vulvovaginitis

Are there POC tests that are available for the detection of yeasts in vaginal samples as cause of vaginitis, and are these tests necessary for good patient outcomes?

Guideline 130. No recommendation for or against the need for a POC test for the detection of yeast in a vaginal specimen. This is because there are no good studies that provide information that a rapid test for the diagnosis that is more sensitive than the wet-mount tests presently available would provide a better clinical outcome than what is presently obtained.

Strength/consensus of recommendation: I
Level of evidence: III

Bacterial Vaginosis (BV)

How accurate is the diagnosis of BV using clinical criteria alone or with a wet-mount observation?

Guideline 131. The guideline developers would suggest that the literature supports the lack of sensitivity and accuracy of clinical criteria alone for the diagnosis of BV. Therefore, additional testing, including POCT, may be necessary to investigate in the future.
Strength/consensus of recommendation: B
Level of evidence: II

What is the association of BV with complications of pregnancy, such as preterm birth?

Guideline 132. The guideline developers would recommend that clinicians routinely provide POCT for pregnant patients for the rapid diagnosis of BV because of its association with preterm birth.
Strength/consensus of recommendation: B
Level of evidence: II

Can a POCT that involves no wet-mount observation be used to detect BV?

Guideline 133. It would be of benefit to have other assays available that do not rely on direct wet mount or gram stain evaluations of vaginal discharge. These would potentially provide assays that could be used as POCT, especially in the pregnant woman. Some literature is available to support the use of non–wet-mount examination tests to make a laboratory diagnosis of BV. However, there are no outcomes studies using any assays other than direct observational examination tests such as wet mounts or gram stains.
Strength/consensus of recommendation: I

<u>Definitions</u>:

Levels of Evidence

I. Evidence includes consistent results from well-designed, well-conducted studies in representative populations.
II. Evidence is sufficient to determine effects, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies; generalizability to routine practice; or indirect nature of the evidence.
III. Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information.

Strength of Recommendations

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CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

It is hoped that these guidelines will be useful for those implementing new testing, as well as those reviewing the basis of current practice. These guidelines should help sort fact from conjecture when testing is applied to different patient populations and establish proven applications from off-label and alternative uses of point-of-care testing (POCT). These guidelines will also be useful in defining mechanisms for optimizing patient outcome and identify areas lacking in the current literature that are needed for future research.

POTENTIAL HARMS

False-positive and false-negative results.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The material in this monograph represents the opinions of the editors and does not represent the official position of the National Academy of Clinical Biochemistry or any of the cosponsoring organizations.

- Point-of-care testing (POCT) is an expanding delivery option because of increased pressure for faster results. However, POCT should not be used as a core laboratory replacement in all patient populations without consideration of the test limitations and evaluation of the effect of a faster result on patient care.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Campbell S, Campos J, Hall GS, LeBar WD, Greene W, Roush D, Rudrik JT, Russell B, Sautter R. Infectious disease. In: Laboratory medicine practice guidelines: evidence-based practice for point-of-care testing. Washington (DC): National Academy of Clinical Biochemistry (NACB); 2006. p. 76-94. [195 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2006

GUIDELINE DEVELOPER(S)

National Academy of Clinical Biochemistry - Professional Association

SOURCE(S) OF FUNDING

National Academy of Clinical Biochemistry

GUIDELINE COMMITTEE

Guidelines Committee

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the National Academy of Clinical Biochemistry (NACB) Web site.

Print copies: National Academy of Clinical Biochemistry publications are available through American Association for Clinical Chemistry (AACC) Press. To make a purchase or request a catalog, contact AACC Customer Service at 202-857-0717 or custserv@aacc.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Preface and introduction. In: Laboratory medicine practice guidelines: evidence-based practice for point-of-care testing. Washington (DC): National Academy of Clinical Biochemistry (NACB); 2006. p. i-xvi.
- Appendix A: NACB LMPG data abstraction forms. In: Laboratory medicine practice guidelines: evidence-based practice for point-of-care testing.

Washington (DC): National Academy of Clinical Biochemistry (NACB); 2006. p. 149-153.
- Appendix B: literature searches. In: Laboratory medicine practice guidelines: evidence-based practice for point-of-care testing. Washington (DC): National Academy of Clinical Biochemistry (NACB); 2006. p. 154-186.

Electronic copies: Available in Portable Document Format (PDF) from the National Academy of Clinical Biochemistry (NACB) Web site.

Print copies: National Academy of Clinical Biochemistry publications are available through American Association for Clinical Chemistry (AACC) Press. To make a purchase or request a catalog, contact AACC Customer Service at 202-857-0717 or custserv@aacc.org.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI Institute on August 10, 2007. The information was verified by the guideline developer on September 24, 2007.

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